

were originally pending. In response to an oral restriction requirement on September 9, 2002, between group I (claims 1-9, 18) and group II (claims 10-17), the claims of group I were elected without traverse for further prosecution on the merits. The Applicants hereby affirm the election of the claims of group I at this time.

Of the claims under consideration, claims 1, 3, 5 and 18 have been rejected under 35 U.S.C. §103(a), as being unpatentable over U.S. Patent 6,300,233 to Lee, et al. (Lee), in view of U.S. Patent 6,033,939 to Agarwala, et al. (Agarwala). In addition, claims 2, 4 and 6-8 are rejected under 35 U.S.C. §103(a), as being unpatentable over Lee, in view of Agarwala, and in further view of U.S. Patent 6,111,301 to Stamper. However, claim 9 has been indicated by the Examiner to contain allowable material. For the following reasons, however, it is respectfully submitted that the application is now in condition for allowance.

As an initial matter, claim 4 has been amended to depend from claim 2, in which the liner material is first introduced. Thus, claim 4 has been placed in proper dependent form, and it is respectfully requested that the objection thereto in that regard be withdrawn.

With regard to the §103 rejections of claims 1-8 on the prior art, the Applicants respectfully traverse the same and request that they be withdrawn for the reason that the Agarwala reference does not disclose an organic material encapsulated underneath a conductive layer, as is particularly set forth in claim 1. A review of the Agarwala reference reveals that the use of conductive organic material (e.g., polyanilines) is used for the fuse material (col. 7, lines 5-6). However, the Agarwala "fuse material", designated by reference numeral 5 in Figures 2-4, is the actual conductive link between circuit elements. Accordingly, the fuse material 5 in Agarwala is analogous to the conductive layer 30 of the present disclosure, not the organic material 26 that is encapsulated underneath the conductive layer 30.

In other words, the organic material in Agarwala is not encapsulated underneath a conductive layer, as is presently claimed in this application. Rather, the organic material in Agarwala is the conductive layer. As is best seen in Figure 3 of Agarwala, the fuse material 5 bridges the interconnection lines 1 over a dielectric layer 4. Thus, the combination of Lee and

Agarwala does not result in the structure claimed in claims 1-8. Moreover, nothing in either Lee or Agarwala suggests encapsulating an organic material underneath a conductive layer.


With regard to claim 18, the Applicants further point out that although Agarwala discloses the use of a conductive organic material for the fuse material, Lee does not teach that the electrically conductive material (used for the fuse structure) is filled within a pair of vias, as is presently claimed. In the Lee reference, the material of the via metal layers 20 (in Figure 2A) is not the fuse material of the device, but simply the typical interconnect material used in connecting different metallization levels of a semiconductor device, as is well known in the art. However as discussed in Lee (column 1, lines 41-49), the fuse structure is simply the planar metal pattern 40 that connects (upper level) conductors 30. The vias 20 of Lee have nothing to do with the fuse structure 40; they simply provide a vertical connection between upper level conductors 20 and lower level conductors 10.

In contrast, the vias of the present disclosure are used to house the organic portion of the fuse structure and, in the case of the embodiment covered by claim 18, the organic portion also serves as the conductive interconnection of the fuse, between adjacent wiring segments. Thus, even if one skilled in the art were motivated to include the use of conductive organic materials (e.g., polyanilines) to modify the device of Lee, the claimed invention would still not be the result thereof. Accordingly, since the obviousness rejections have been overcome, it is respectfully requested that they be withdrawn.

For the above stated reasons, it is respectfully submitted that the present application is now in condition for allowance. No new matter has been entered and no additional fees are believed to be required. However, if any fees are due with respect to this Amendment, please charge them to Deposit Account No. 06-1130 maintained by applicants' attorneys.

Respectfully submitted,
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Version of Marked Up Changes Made

A marked up version of claim 3 follows:

"4. (Amended/Marked up) The fuse structure of claim [1] 2, wherein said liner material is selected from a group that includes TaN, Ta, TiN, Ti, W, WN, TaSiN, TiSiN, or alloys therefrom."

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